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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,932	05/31/2002	Gunter Heil	P21954	8125
7055	7590	03/02/2004	EXAMINER	
GREENBLUM & BERNSTEIN, P.L.C.			CHANEY, CAROL DIANE	
1950 ROLAND CLARKE PLACE			ART UNIT	PAPER NUMBER
RESTON, VA 20191			1745	

DATE MAILED: 03/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/031,932

Applicant(s)

HEIL ET AL.

Examiner

Carol Chaney

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date 18 June 2002.

***Information Disclosure Statement***

Applicant states in the remarks filed with the Information Disclosure Statement of 18 June 2002, "Applicants further direct the Examiner's attention to WO 01/07367 which is the publication of International Application No. PCT/EP00/06766 of which U.S. Application No. 10/031,933 is the U.S. National Stage Application."

Based upon the documents provided by the applicant, it appears the correct documents should be:

WO 01/07368 which is the publication of International Application No. PCT/EP00/06768 of which U.S. Application No. 10/031,932 is the U.S. National Stage Application.

The examiner respectfully request confirmation of the correct document numbers.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled

in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term "lithium oxide-containing lithium intercalation compound" in claims 1-26 is used by the claim to mean "lithium-transition metal oxide", while the accepted meaning is "an intercalation compound which contains  $\text{Li}_2\text{O}$ ." The term is indefinite because the specification does not clearly redefine the term.

With regards to claims 10-20, the term "active oxygen" is not defined, and is not considered a term of the art. Thus, these claims are indefinite because "the number of equivalents of active oxygen is equal to or greater than the number of lithium atoms. In particular, it is unclear how "active" oxygen is distinguished from other types of oxygen. Although the term "active Oxygen" is used throughout applicants' specification, for example at page 10 of the specification, the term is not defined.

It is further noted that the term "high loadability" is used throughout the specification to describe applicants' invention, but the term is not considered a term of art and is not defined.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7 and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsubara et al., US Patent 6,045,771.

Matsubara et al. disclose lithium metal oxide intercalation compounds used as cathode active materials in lithium secondary batteries. The BET specific surface areas of the materials disclosed by Matsubara et al. is between 0.1-2 m<sup>2</sup>/g. The particles are agglomerates, with the secondary particle sizes in the range 5-100 μm and the primary particle diameters in the range 0.3-2.0 μm. (Column 3, lines 30-62.) As shown, for example in Figure 25, the d<sub>50</sub> value of materials disclosed by Matsubara et al. is greater than 10 μm and the d<sub>90</sub> value is smaller than 40 μm. Compounds disclosed by Matsubara et al. include manganese, lithium and oxygen, and thus with regards to claims 7 and 8 are considered to include lithium manganese oxides. (See column 4, lines 43-53.)

The disclosure of Matsubara et al. differs from applicants' disclosure in that Matsubara et al. do not specifically recite sizes and volumes of intrapores in their inventive materials. However, from the SEM photomicrograph shown in Figure 25 of the Matsubara et al. patent, values of intrapore volume and intrapore size estimated by using conventional stereographic techniques appear to be within the ranges claimed by the applicants.

With regards to claims 21-26, Matsubara et al. disclose forming positive lithium battery electrodes by mixing an inventive lithium metal oxide with carbon powder and binder, and pressing the mixture. The thickness of the cathode material before pressing is about 0.5mm. (See column 13 line 57-column 14 line 26. Although the thickness of

the cathode after pressing is not specified, it would clearly be less than 0.5 mm after pressing, and thus would be of the same order of magnitude of thickness as the cathode disclosed in applicants' specification.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata et al., JP 11-071115.

Iwata et al. disclose lithium-manganese based oxide with a spinel structure as a lithium battery cathode active material.

The oxide preferable has a 1-50 micron average agglomerated particle diameter, 0.1-5 m<sup>2</sup>/g BET specific particle size and an average primary particle diameter of less than 3 microns. (See abstracts.)

The disclosure of Iwata et al. differs from applicants' invention in that Iwata et al. do not disclose  $d_{90}$  particle size diameters and do not disclose intrapore sizes or volumes. However, based upon the SEM photo shown in Figure 2 of the Iwata et al. patent, values of intrapore volume and intrapore size estimated by using conventional stereographic techniques appear to be within the ranges claimed by the applicants.

### **Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yamashita et al., US Patent 6,255,620 discloses lithium transition metal oxide electrochemically active materials.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol Chaney whose telephone number is (571) 272-1284. The examiner can normally be reached on Mon - Fri 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Carol Chaney  
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Art Unit 1745